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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/541,829

07/12/2005

Parvinder S Walia

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109 7590 12/15/2008

The Dow Chemical Company  
Intellectual Property Section  
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EXAMINER

ASINOVSKY, OLGA

ART UNIT

PAPER NUMBER

1796

MAIL DATE

DELIVERY MODE

12/15/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/541,829	<b>Applicant(s)</b> WALIA ET AL.	
	<b>Examiner</b> OLGA ASINOVSKY	<b>Art Unit</b> 1796	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 and 20-40 is/are pending in the application.
- 4a) Of the above claim(s) 6-8, 17 and 20-40 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-5, 9-16, 18, 23 and 24 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 July 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>04/30/2008</u>  | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

The amendment of 06/09/2008 to claim 1 is considered. Applicants amend claim 1 by adding step (b) forming the polyolefin polymer into a fabricated article selected from the group consisting of film fiber, foam, molded articles and wire and cable coating, and (c) applying a material to the fabricated article which is capable of catalyzing a hydrolysis reaction between the silane moieties grafted to the polymer and moisture.

Claims 36-40 are withdrawn.

Claims 1-5, 9-16, 18, 23-24 are under examination.

### ***Claim Rejections - 35 USC § 112***

1. Claims 1 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

For claim 1 a step (b) forming the polyolefin into a fabricated article has no effect on a crosslinking process as originally claimed in claim 1 because the claimed invention in the original claim 1 is a process for crosslinking a polyolefin polymer by a grafting reaction wherein a silane material, peroxide and polymer wherein all these ingredients are mixed thoroughly prior to initiating the grafting reaction using an extruder, the evidence is in the present claim 10. It is not clear whether the recitation for forming a fabricated article is related to the starting polyolefin product. There was a restriction between Group I and Group II having an intermediate-final product relationship (office action mailed on 08/21/2007). The recitation step

(b) for forming a fabricated article makes a process for crosslinking a polyolefin polymer indefinite since the polyolefin, silane material and peroxide are mixed in an extruder.

Term “capable” has no positive limitation but only requires the ability of the reaction. Therefore, a method in step (c) in claim 1 is indefinite. *In re Hutchison*, 69 USPQ 138.

For claim 18 a partially crosslinked fabricated article is confusing and it is not clear because a process for crosslinking a polyolefin polymer includes grafting a silane material in the presence of peroxide onto the polyolefin base polymer wherein all three components are mixed in the extruder.

### ***Claim Rejections - 35 USC § 102/103***

2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

3. Claims 1-4 and 13 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Feichtinger U.S. Patent 5,929,129.

4. All discussions in the prior office action mailed on 12/14/2007 are adequately set here by reference.

In addition, Feichtinger discloses the claimed vinyl trimethoxy silane (VTMOS) and vinyl triethoxy silane (VTEOS) having claimed formula  $R-Si-R'$  wherein said silane compounds are hydrolyzable, for the present claims 1 and 13. The claimed term “improvement” is without any characteristic. Feichtinger discloses crosslinking effect when silane-grafted polymers are used by exposing to moisture, column 16, lines 3 and 48-49, for the present amendment for “catalyzing a hydrolysis reaction between the silane moieties grafted to the polymer and

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moisture.” To accelerate the crosslinking effect a hot-water tank is used for sufficient time, column 16, lines 48-49 and 66. Feichtinger discloses a catalyzing hydrolysis reaction. To analyze the claimed requirement “molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction” (referring to the present original specification at page 6, lines 24-28), the inventors disclose “it is important for the present invention that the effective molar ratio of silane to alkoxy radical used in the grafting reaction be maintained at 40:1 or higher, more preferably 45:1 or higher, most preferably 50:1 or higher. For example, in the case of LUPEROX<sup>TM</sup> 101 or its equivalent, the **weight ratio of VT MOS to peroxide used in the grafting reaction should be maintained at above 80:1 (which CORRESPONDS to 40:1 molar ratio of VT MOS to alkoxy radicals)** or higher, more preferably above 100:1.” Thus, the weight ratio of VT MOS to peroxide is about 80:1, more preferably above 100:1 in the present invention, referring to the original specification at page 6, lines 24-28. Feichtinger discloses the grafting mixture of VT MOS and peroxide compound in a ratio of between 100:1 and 10:1, column 7, lines 18-24. The **claimed “molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction” is readable in the broad ratio in Feichtinger invention.** *In re Fitzgerald* et al 619 F.2d 67, 205 USPQ 594 (CCPA 1980). Even, is assuming that the prior art reference does not meet the requirement of 35 U.S.C. 102, it would have been obvious to one of ordinary skill in the art at the time of the invention was made to use a process for producing the crosslinked silane grafted polyolefin in the presence of an organic peroxide in Feichtinger invention, wherein the molar ratio of silane material to free radical is controlled for the purposes to improve the crosslinking property and subsequent extruding property, and, thereby, obtain the

claimed limitation of effective molar ratio of silane material to free radical of 45:1 or greater in the grafting reaction in the disclosure in Feichtinger invention.

***Response to Arguments***

5. Applicant's arguments filed 06/09/2008 have been fully considered but they are not persuasive. Argument is that Feichtinger discloses a molecular ratio whereas the present claims require a molar ratio. Term "molar ratio" is between moles of silane to moles of peroxide. The term "mole" is gram-mol=gram molecular weight. In the present specification at page 6 applicants convert weight ratio to molar ratio that is within the range of VTMOs to peroxide compound in Feichtinger invention.

Second argument is that upon the amendment claim 1 requires that a hydrolysis catalyst is applied to a fabricated article comprising a polyolefin polymer with grafted silane material. Feichtinger does disclose crosslinking "when silane-grafted polymers are used by exposing to moisture," column 16, lines 3 and 48-49. To accelerate the crosslinking effect a hot-water tank is used for sufficient time, column 16, lines 48-49 and 66. A suitable silanolysis catalyst is optionally catalyst.

Applicants' arguments are not persuasive.

***Claim Rejections - 35 USC § 103***

6. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

7. Claims 1-5, 9-16, 18 and 23-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jackson et al U.S. Patent 6,455,637 in view of Feichtinger U.S. Patent 5,929,129.

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All discussions in the office action mailed on 12/14/2007 are adequately set here by references.

In addition to Jackson, reference discloses crosslinking effect by exposing it to moisture, column 2, lines 52-67 and column 3, lines 1-5. Claimed fabricated article from the polyolefin polymer in the amended claim 1 step (b) is within the scope of polyolefin resin since the grafting reaction is carried out using an extruder and the temperature profile of the extruder wherein the silane, peroxide and polymer are mixed, which is supported in the present claims 9-10.

### ***Response to Arguments***

8. Applicant's arguments filed 06/09/2008 have been fully considered but they are not persuasive. There is no catalyst for hydrolyzing reaction in the present claims. To facilitate the hydrolyzing reaction the heat performance is applied to accelerate crosslinking effect.

9. Rejection of claim 1 under 103(a) over Brann et al U.S. Patent 5,741,858 in view of Feichtinger' 5,929,129 is withdrawn because a starting polyolefin is modified polyolefin containing a grafted polar functionality such as an anhydride, column 2, lines 1-10.

### ***Conclusion***

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to OLGA ASINOVSKY whose telephone number is (571)272-1066. The examiner can normally be reached on 9:00 to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski can be reached on 571-272-1302. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Randy Gulakowski/  
Supervisory Patent Examiner, Art Unit 1796

Olga Asinovsky  
Examiner  
Art Unit 1796



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/O.A./